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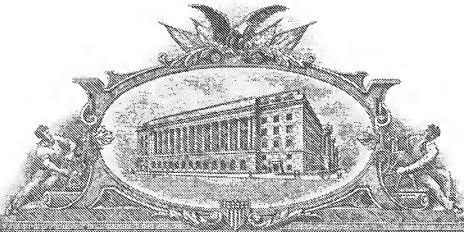
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APPLICATION NUMBER: 60/543,356

FILING DATE: *February 09, 2004*

RELATED PCT APPLICATION NUMBER: PCT/US05/03976



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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EU392800881US

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Mathias	Agopian	Mountain View, California

Additional inventors are being named on the 2 separately numbered sheets attached hereto**TITLE OF THE INVENTION (500 characters max)****ENHANCED SYSTEM ARCHITECTURE OF AN OPERATING SYSTEM FOR COMMUNICATION BETWEEN REMOTE DATA DEVICES AND A DATA SITE**

Direct all correspondence to:

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ENCLOSED APPLICATION PARTS (check all that apply)

<input checked="" type="checkbox"/> Specification Number of Pages _____	<input type="checkbox"/> CD(s), Number _____
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<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.	FILING FEE Amount (\$) <div style="border: 1px solid black; padding: 10px; width: 100px; margin: 0 auto;">160.00</div>
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[Page 1 of 2]

Respectfully submitted,

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Date February 9, 2004

REGISTRATION NO. 33,830

(if appropriate)

Docket Number: 004-0011P-B

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PROVISIONAL APPLICATION COVER SHEET
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PTO/SB/16 (08-03)

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[Page 2 of 2]

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT

(\$160.00)

Complete if Known

Application Number to be assigned

Filing Date February 9, 2004

First Named Inventor Mathias Agopian, et al.

Examiner Name to be assigned

Art Unit to be assigned

Attorney Docket No. 004-0011P-B

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☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 180	2005 80	Provisional filing fee	160.00

SUBTOTAL (1) (\$160.00)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	-20** =	X	
Multiple Dependent	-3** =	X	

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 over original patent

SUBTOTAL (2) (\$)

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FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity, Small Entity

Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(g)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

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SUBTOTAL (3) (\$)

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Date February 9, 2004

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**ENHANCED SYSTEM ARCHITECTURE OF AN OPERATING SYSTEM FOR
COMMUNICATION BETWEEN REMOTE DATA DEVICES AND A DATA SITE**

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present provisional application is related to PalmSource, Inc. Attorney Docket No. 004-0011P-A, filed on February 9, 2004. The contents of this provisional application and all the documents referenced there are incorporated herein by reference.

FIELD OF THE INVENTION

1. Field of Invention

[0002] The present invention relates generally to an enhanced system architecture of an operating system for a remote data device such as a Palm® wireless computing device and its ability to communicate with a data site. More specifically, the present invention relates to various components and features that provide improved functionality of the overall architecture of the operating system.

2. Introduction

[0003] Handheld computing devices, such as “palmtops,” “palmhelds,” personal digital assistants (PDAs), or handheld computers typically provide some combination of personal information management, database functions, word processing, and spreadsheets as well as voice memo recording, wireless e-mail, and wireless telephony functions. Handheld computers may include hardware modules, which typically allow a user to access and communicate wirelessly via both wired and wireless communication networks. Such networks may include Local Area

Networks (LANs) and Personal Area Networks (PANs). Existing technologies such as “Bluetooth®” provide a means to connect mobile devices to a communications network.

[0004] Providing an effective operating system for such handheld devices requires integration of many hardware and software features. These devices are popular because they provide users with many applications such as address books, telephone capabilities, web surfing, and e-mail. While these basic components are common to many computing devices, there are opportunities to improve the operating system to enable increased security, device resource efficiency, improved interoperability between applications and operating system processes, connectivity with various wired and wireless networks, synchronization, multi-media applications, previous version backwards compatibility, and so forth.

[0005] As the use of small computing devices continues to grow, enhanced operating systems that provide improvements in many if not all of the features available are continuously sought by users.

[0006] By way of one example, there are several collaborative systems that allow the “sharing” of data between users. In all of these systems, each user has a separate copy of the data, and the “sharing” mechanism maintains a relationship between sets of objects. This method is utilized even if the database that contains the shared data is common between the users. Thus, two people attending the same meeting in “Exchange” have different event objects on their calendars, and “Exchange” has additional mechanisms attached to the event objects so that by changing one, the change is replicated to the others.

[0007] By way of another example, objects have to both describe themselves and serialize themselves. All object-based serializers (e.g., Microsoft®’s serializer) require the

programmer to unite the serializer and unserialized methods.

SUMMARY OF THE INVENTION

[0008] Additional features and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The features and advantages of the invention may be realized and obtained by means of the instruments and combinations particularly pointed out. These and other features of the present invention will become more fully apparent from the following description or may be learned by the practice of the invention as set forth herein.

[0009] The present patent application provides a disclosure of the overall architecture of an operating system for a computing device and its various features and components. One such computing device is a hand-held computing device that has the capability of communicating via a wireless medium with a wireless network such as a cellular network, WiFi network, or other wireless network for a variety of applications. The many features of the operating system are focused in a variety of technology areas and described in greater detail in the related provisional application (Attorney Docket No. 004-0011P-A) filed concurrently with this application and incorporated herein by reference. These features relate to such areas as overall architecture, memory management, device management, scalability, communications services, input/output processing, multi-media processing and graphics subsystem, a binder framework, efficiency, various personal information management systems, telephone services, web services, desktop synchronization, synchronization and more.

[00010] The operating system comprises many inventions relating to methods, systems, computing devices, computer-readable media storing computing instructions, operating system software and various modules and components associated with the operating system software, graphical user interfaces and network architectures that embody the various features and combinations of features disclosed herein.

[00011] By way of the first example discussed above, in the enhanced operating system objects are not replicated. If two users are having the same exact object on their calendars, only one event is stored on the server. This is by way of a global identification. Each object is assigned a globally unique identification within the server. When these objects are manipulated by different users on their PC or handheld device, the globally unique identification is the same identification across all of the same shared objects.

[00012] By way of the second example discussed above, in the enhanced operating system a single "composition" method that describes the structure is maintained. The method is used to serialize, unserialize, describe and partly to display.

BRIEF DESCRIPTION OF THE DRAWINGS

[00013] A complete understanding of the many inventions within the overall operating system and its advantages may be gained from consideration of the following description of some disclosed embodiments taken in conjunction with the accompanying drawings. It should be understood that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings.

Additional particulars of the operating system are discussed in the related provisional application filed concurrently and the various documents referenced within that application.

[00014] FIGURE 1 is an overall system diagram that depicts one or more remote devices such as a handheld computing device in communication with a data site;

[00015] FIGURE 2 is block diagram representing the schematic conventions of the overall architecture;

[00016] FIGURE 3 is block diagram of the process components and memory mapping of the overall architecture;

[00017] FIGURE 4 is a block diagram of the handheld synchronization of the overall architecture;

[00018] FIGURE 5 is a block diagram of the I/O services framework of the overall architecture;

[00019] FIGURE 6 is a block diagram of the networking basic protocol stack of the overall architecture;

[00020] FIGURE 7 is a block diagram of the telephony of the overall architecture;

[00021] FIGURE 8 is a block diagram of the mobile mail attachment support of the overall architecture;

[00022] FIGURE 9 is a block diagram of the message download/synchronization of the overall architecture;

[00023] FIGURE 10 is a block diagram of the multimedia services of the overall architecture;

[00024] FIGURE 11 is a block diagram of the desktop synchronization of the overall

architecture;

[00025] FIGURE 12 is a block diagram of the text manager of the overall architecture;

[00026] FIGURE 13 is a block diagram of the text services manager of the overall architecture;

[00027] FIGURE 14 is a block diagram of the overlays of the overall architecture; and

[00028] FIGURE 15 is a block diagram of the security components of the overall architecture.

[00029] In order to describe the manner in which the above-recited and other advantages and features of the invention can be obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended documents and drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[00030] The details of the present invention will be understood with reference to the various documents referenced in the related provisional application filed concurrently with this application today (Attorney Docket No. 004-0011P-A). Each document referenced in that application is also incorporated herein by reference.

[00031] Embodiments within the scope of the present invention may also include computer-readable media for carrying or having computer-executable instructions or data structures stored thereon. Such computer-readable media can be any available media that can be accessed by a general purpose or special purpose computer. By way of example, and not limitation, such computer-readable media can comprise RAM, ROM, EEPROM, CD-ROM or

other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to carry or store desired program code means in the form of computer-executable instructions or data structures. When information is transferred or provided over a network or another communications connection (either hardwired, wireless, or combination thereof) to a computer, the computer properly views the connection as a computer-readable medium. Thus, any such connection is properly termed a computer-readable medium. Combinations of the above should also be included within the scope of the computer-readable media.

[00032] Computer-executable instructions include, for example, instructions and data which cause a general purpose computer, special purpose computer, or special purpose processing device to perform a certain function or group of functions. Computer-executable instructions also include program modules that are executed by computers in stand-alone or network environments. Generally, program modules include routines, programs, objects, components, and data structures, etc. that perform particular tasks or implement particular abstract data types. Computer-executable instructions, associated data structures, and program modules represent examples of the program code means for executing steps of the methods disclosed herein. The particular sequence of such executable instructions or associated data structures represents examples of corresponding acts for implementing the functions described in such steps.

[00033] Those of skill in the art will appreciate that other embodiments of the invention may be practiced in network computing environments with many types of computer system configurations, including personal computers, hand-held devices, multi-processor

systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. Embodiments may also be practiced in distributed computing environments where tasks are performed by local and remote processing devices that are linked (either by hardwired links, wireless links, or by a combination thereof) through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

[00034] Referring now to Figure 1, a plurality of remote devices R1-Rn, such as any one of a myriad of computing devices, with communication capability are shown communicating through a communications network CN with a data site CS. The communications network CN may be any one of a wired or wireless networks. The data site CS represents an architecture of one or more shared databases or separate databases with data for use by the remote devices R1-Rn. The remote device includes interactive hardware and software that performs functions such as maintaining calendars, phone lists, note pads, calculator applications, spreadsheets, games, video files and other applications capable of running on a computing device. Furthermore, the handheld device may be configured for such functions as a voice memo recording and playback as well as communications network connectivity, wireless messaging, e-mail, always-on-email, and wireless telephony.

[00035] In an exemplary embodiment, a handheld computer may include an integrated antenna configured to transmit and receive wireless communication signals, such as, but not limited to, cellular telephone communication signals and other radio frequency (RF) communications signals using an RF transceiver. The antenna may further include an indicator light integrated into the antenna for indicating the transmission and reception of wireless

communication signals. Further, the light may be used to indicate other states of the handheld computer. Further, the handheld computer may include a wireless transceiver, such as a Bluetooth® transceiver or an IEEE 802.11 standard transceiver, or other RF or wireless transceiver, such that the handheld computer is configured to communicate with other nearby devices and/or access points to a communications link.

[00036] Figure 2 indicates the schematic conventions of the overall architecture. The architecture and enhanced features of the shared database offer enhanced stability, security, memory mapping (see Figure 3), and processing capability of the components. The remote devices R1-Rn facilitate improved synchronization techniques for synchronization of data between the remote device (see Figure 4) and for example a desktop unit (see Figure 1). The operating system offers extended architecture including a “STREAMS” (see related provisional application and documents for details) communication framework (Figure 5), which is flexible and scalable, and offers a new stack protocol (Figure 6) that enables much higher performance. It also includes an input/output framework with unified APIs (see related provisional application and documents for details) and a unified driver model for all devices. A multimedia framework (Figure 10) offers highly modular and high performance capabilities. It uses simple plug-ins for file formats and codecs, and more advanced node based architecture to provide advanced scalability. A “BINDER” (see related provisional application and documents for details) framework can support any language and a graphic subsystem that boasts high performance and a design to support fully featured hardware acceleration.

[00037] The new operating system offers many improved features, for example, enhanced search and lookup ability, shared components, better compatibility with Microsoft

Outlook®, enhanced display ability, import and export ability between the SIM card and the phone address book. Specifically, with respect to calendaring or datebook operations, the operating system offers time zone and daylight saving support, ability for events to span two consecutive days and direct synchronization to an exchange server. It features a memo pad for taking notes up to 64K in length. With respect to telephony applications (see Figure 7), the operating system allows for multi-party call handling, whereby callers may join a conference or switch or hold for a conference. There are enhanced network and phone settings, notification and logging configuration, status display, and address book integration.

[00038] With respect to receipt of emails, the operating system provides for attachment support via the exchange manager, easy account configuration with ISP list, HTML message (conversion to text) and secure authentication (POP/IMAP). For attachment support (see Figure 8), operations involve passing the attachment from a mobile mail unit to the viewer for viewing, requesting the attachment from within the mobile mail for sending, and sending the attachment from the viewer to the mobile mail.

[00039] In Figure 9, the operations of downloading and synchronizing messages are shown. The mobile unit may be directly synchronized to the mail server using IP in the cradle.

[00040] Figure 15 indicates a block diagram of the various security components, for example, applications, system modules, drivers, services, all make use of secure data services. A data manager handles creation and secures storage. An authorization manager and authentication manager provide access control. Backup options are part of the access control on secure databases.

[00041] The operating system is useful for international use in that it offers a text manager (see Figure 12), a text services manager (see Figure 13), overlays (see Figure 14), locale-specific functionality, and internationalized components.

[00042] As far as compatibility with the desktop, the operating system has an address book that has additional fields for compatibility with Microsoft outlook. It has a date book, with time zone awareness and events spanning midnight and about 256 categories per application and records in multiple categories. The operating system has improved techniques for desktop installation of software and has many multimedia services. The operating system also utilizes improved synchronization techniques between the handheld and the desktop.

[00043] Further description of the figures here on the overall architecture may be found in the documents accompanying the related provisional application also filed today.

[00044] While the detailed drawings, specific examples and particular formulations given describe preferred and exemplary embodiments, they serve the purpose of illustration only. The inventions disclosed are not limited to the specific forms shown. For example, the methods may be performed in any of a variety of sequence of steps. The hardware and software configurations shown and described may differ depending on the chosen performance characteristics and physical characteristics of the computing devices. For example, the type of computing device, communications bus, or processor used may differ. The systems and methods depicted and described are not limited to the precise details and conditions disclosed. Furthermore, other substitutions, modifications, changes, and omissions may be made in the design, operating conditions, and arrangement of the exemplary embodiments without departing from the scope of the invention as expressed.

**ENHANCED SYSTEM ARCHITECTURE OF AN OPERATING SYSTEM FOR
COMMUNICATION BETWEEN REMOTE DATA DEVICES AND A DATA SITE**

ABSTRACT OF THE DISCLOSURE

[00045] The present invention relates generally to an enhanced system architecture of an operating system for a remote data device such as a Palm® wireless computing device and its ability to communicate with a data site. More specifically, the present invention relates to various components and features that provide improved functionality of the overall architecture of the operating system.

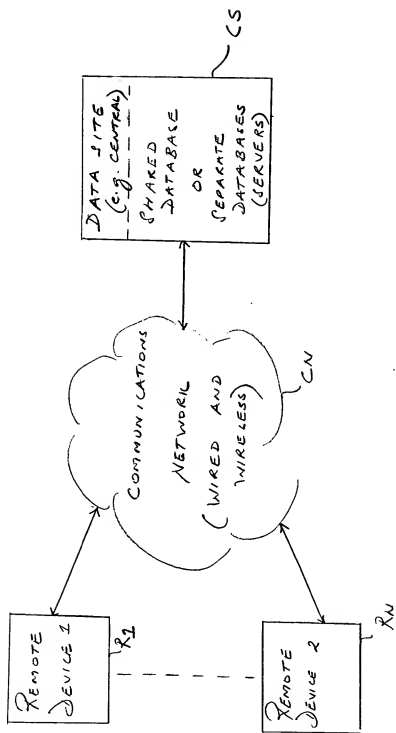
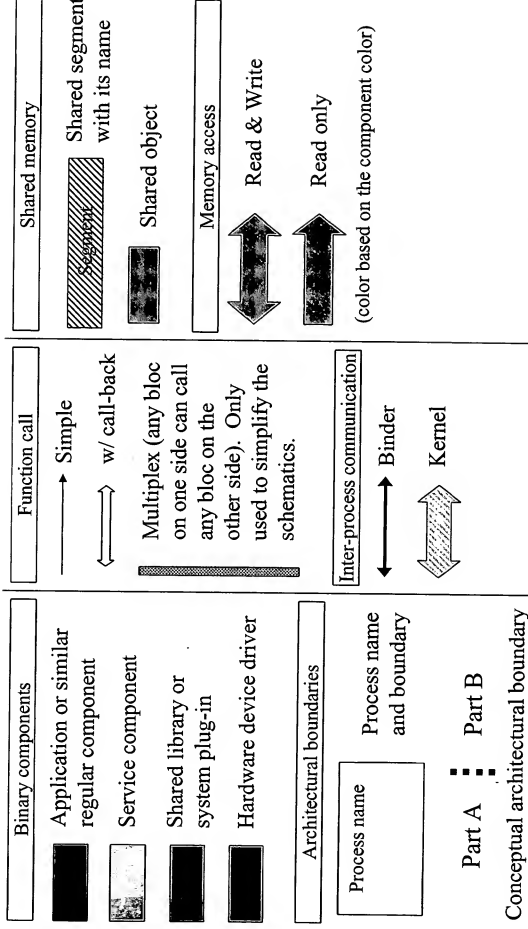


FIG. 1

FIG. 2

Schematic conventions



Process components & memory mapping

[illegible]

FIG. 4

Handheld Sync

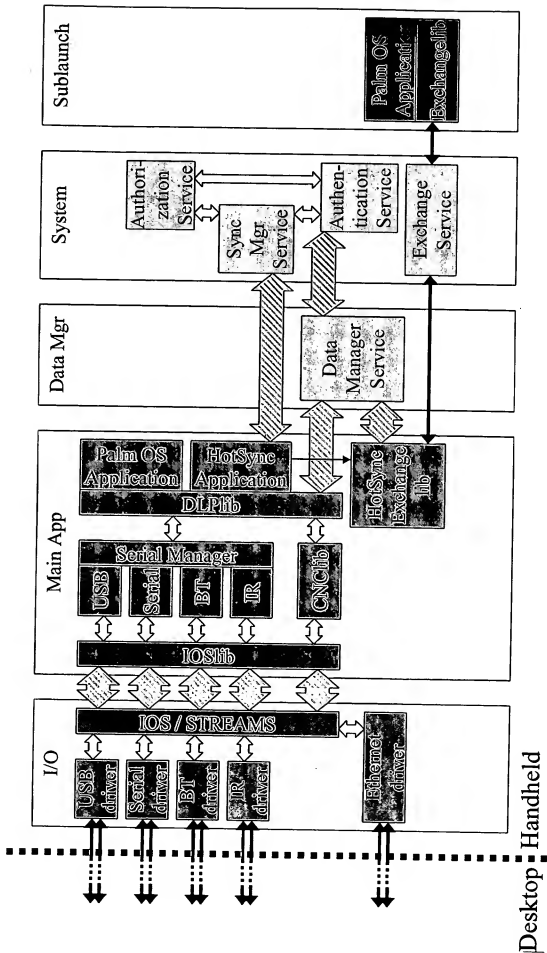


FIG. 5

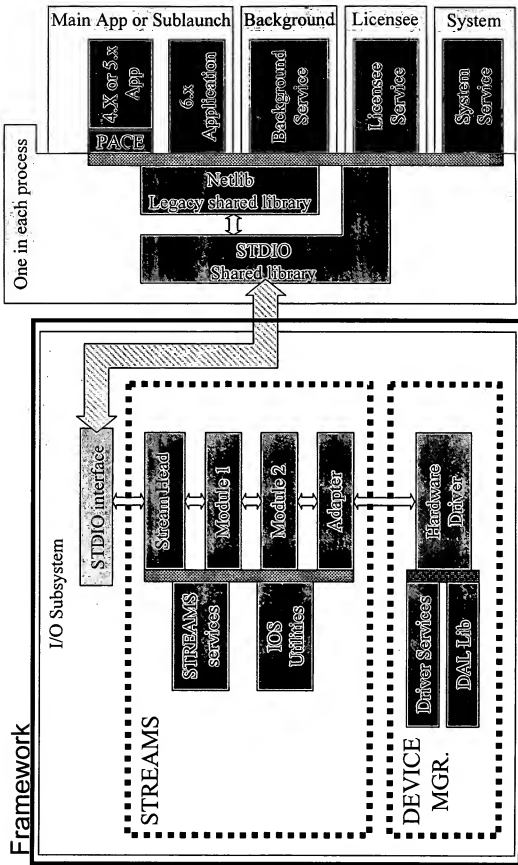


FIG. 3

Networking

FIG. 6

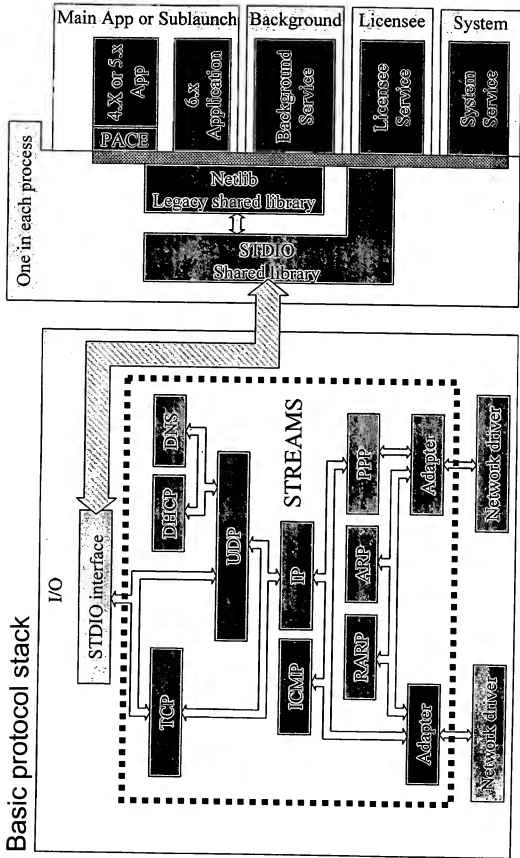
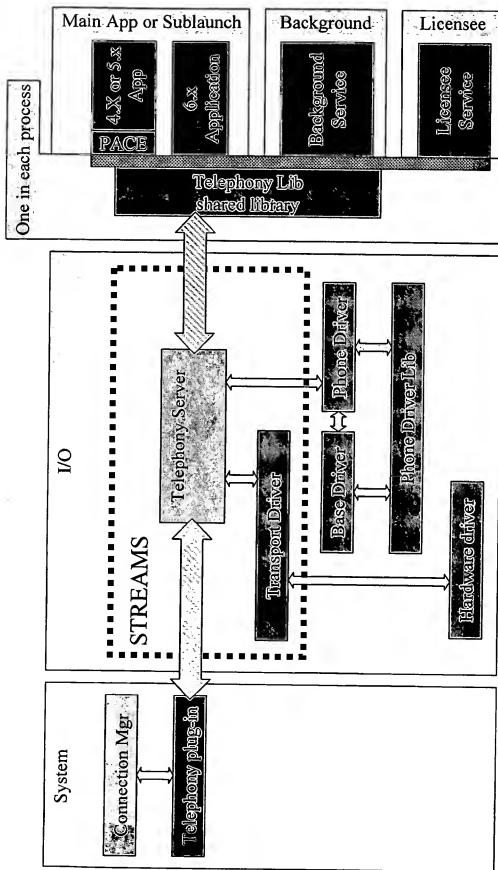


FIG. 5

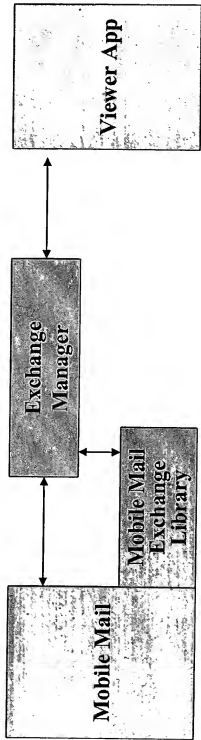
Telephony

FIG. 7



mobile mail
Attachment Support

FIG. 8



Message Download/
Synchronization

FIG. 9

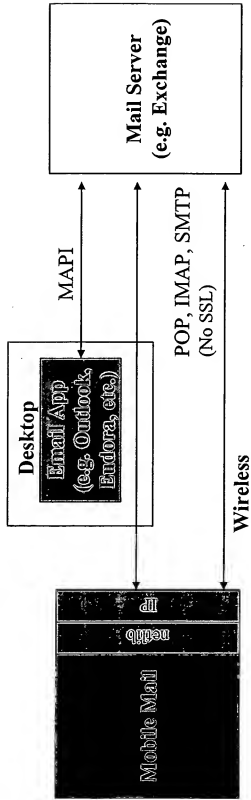


Fig. 10

Multimedia services

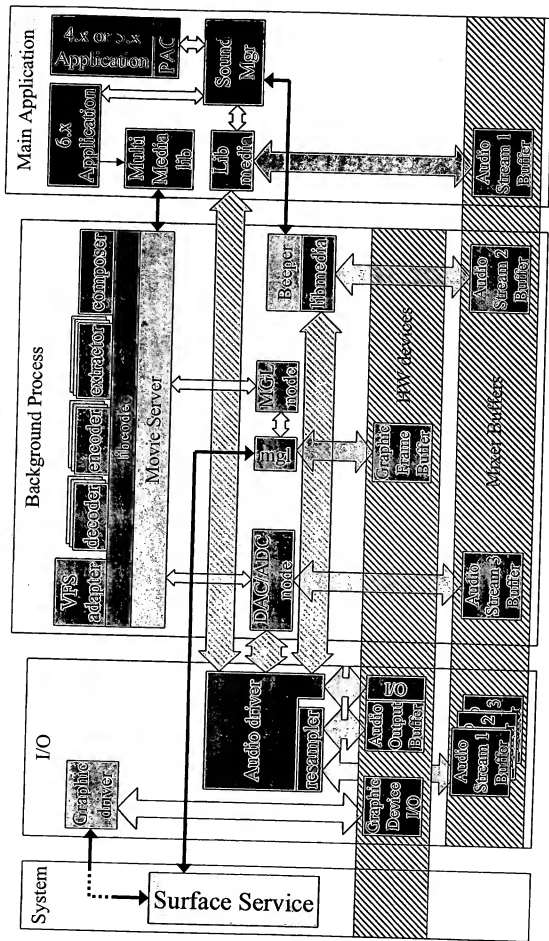


FIG. 11

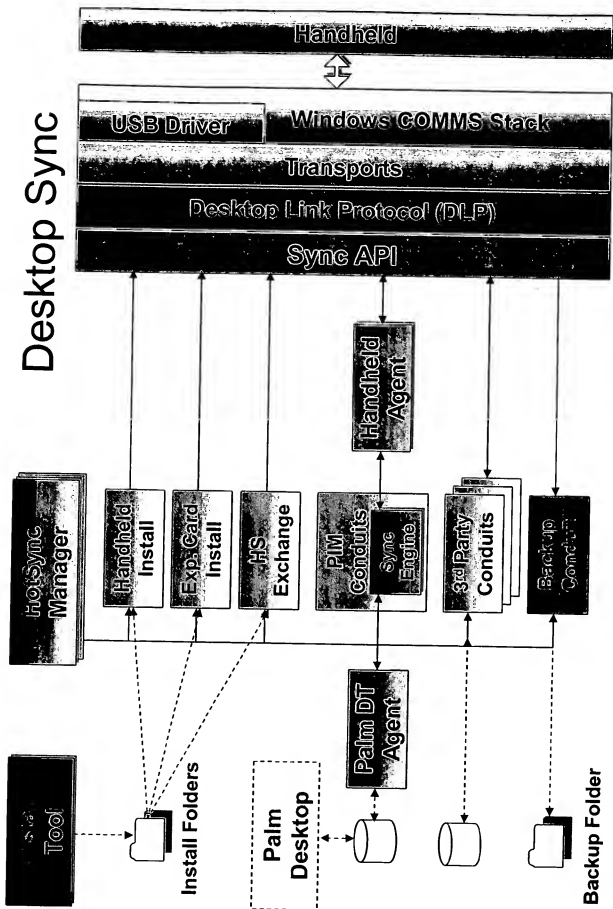


Fig. 12

Text Manager

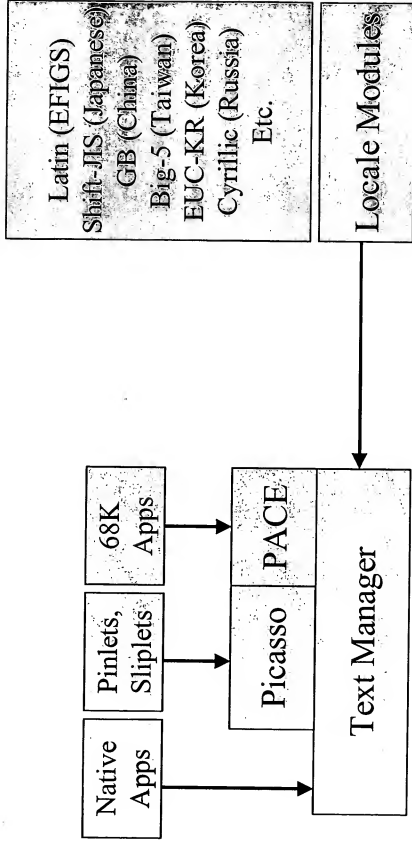
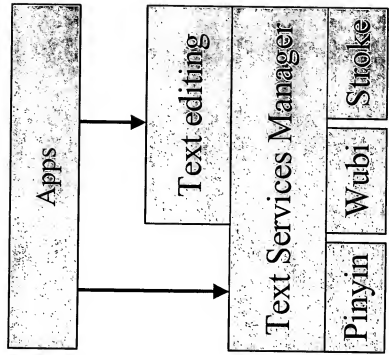


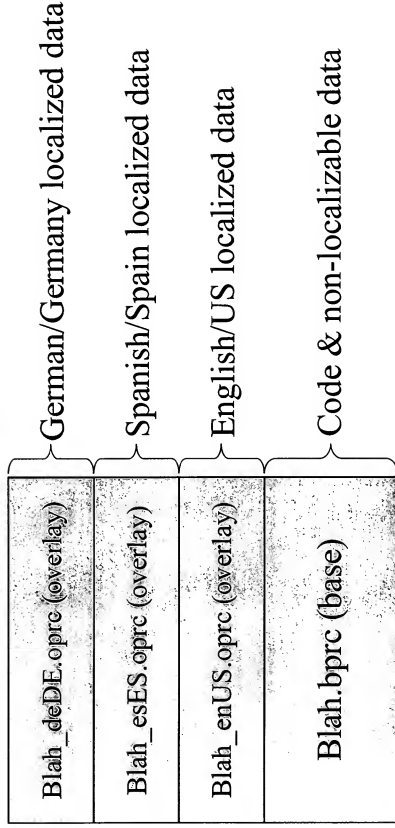
Fig. 13

Text Services Manager



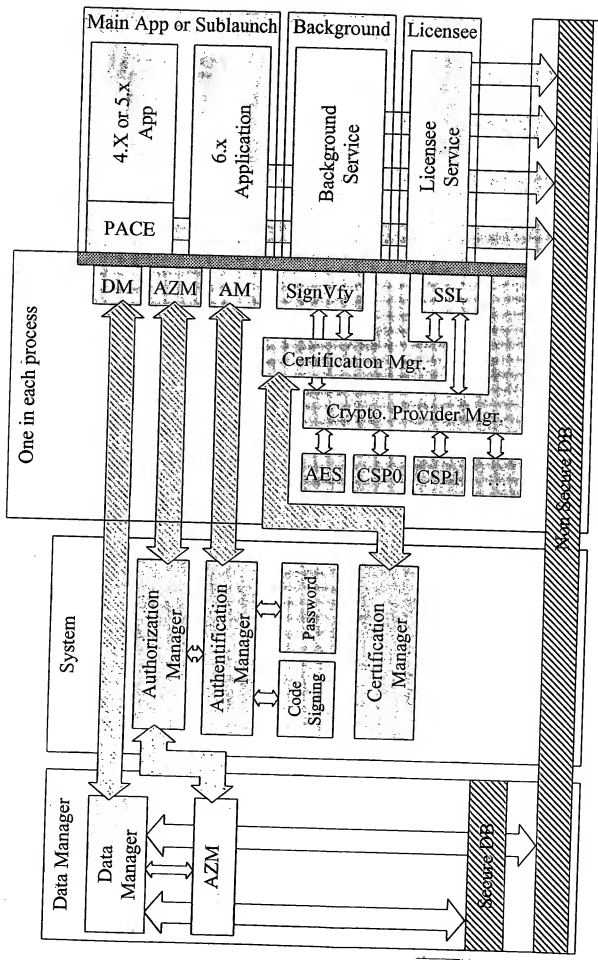
Overlays

Fig. 14



Security Components

Fig. 15



APPLICATION DATA SHEET

Applicant Information

Application Type:	Provisional
Subject Matter:	Utility
CD-ROM or CD-R:	No
Title	Enhanced System Architecture Of An Operating System For Communication Between Remote Data Devices And A Data Site
Attorney Docket Number:	004-0011P-B
Total Drawing Sheets:	
Small Entity:	No

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Related Patent Application Information

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004-0011P-A	Provisional		February 9, 2004